

**SEEKING THE RECIPE FOR SUCCESS IN DISTANCE EDUCATION:**

**LESSONS FROM A NUTRITION COURSE**

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Running Head: Nutrition by distance education

## **ABSTRACT**

There is much debate as to how best to exploit the potential of the internet when designing distance education (DE) courses; the “formula for success” is still to be determined. In this Darwinian struggle for “market share” Athabasca University (AU) has established itself as the leading DE university in Canada. Courses at AU include four in nutrition. Enrollment growth has been rapid in recent years. We investigated factors that may be responsible for this success. We garnered the opinions of former nutrition students using a mailed questionnaire (response rate: 57.1%; 176 returned). We investigated the following factors with respect to the highest enrollment nutrition course: (1) why students took the course at AU (rather than a similar course at another university); (2) student opinions of the course; (3) student preferences for receiving course materials in a printed format or via a computer; and (4) student opinions of AU. The leading reason for taking the nutrition course by DE is work commitment, followed by family commitment, a preference for DE, a recommendation, and no other one was available. The learning materials for the course are print based. This appears to be important as only 4% of students prefer to receive their textbook via a computer rather than printed. Another factor is that AU is well respected by its students: only 11% feel that AU courses are of lower academic credibility than similar courses at other Canadian universities.

**Key Words:** Distance education; Nursing education; Health education; Nutrition education

## **INTRODUCTION**

It has been said that there are three golden rules for writing a successful novel, but no one knows what they are. The same might be said for offering programs and courses by distance education (DE) in the age of the internet.

For many years correspondence courses were widely viewed as inferior to face-to-face education. Today, however, every university in Canada offers some form of DE, and DE no longer needs to be justified as a legitimate and effective method of teaching and learning. The emergence of the new technologies in general, and the internet in particular, are primarily responsible for the growing interest in DE. A large numbers of courses are now offered online and incorporate various types of computer-mediated interaction, most of which provide course materials via the internet and require students to communicate with teachers via e-mail. The increased availability of online courses has meant that students can find and select courses from several different providers. One of the largest providers of DE is Athabasca University (AU), Canada's leading DE and online university.

AU, located in northern Alberta, in the west of Canada, opened in 1970 as a distance and open learning institution. It currently serves more than 26,000 students per year. The large majority of AU courses, at least the undergraduate ones, can be taken anywhere and at any time. About 35% of the students who take AU courses are enrolled in degree programs at other universities and typically take a small number of AU courses which they then apply toward their degree.

An AU undergraduate “course package” normally contains a textbook, reading package, study guide, and student manual with instructions on how to proceed through the course. Students have up to six months to complete the course but may complete earlier, or pay for an extension if they need more time. Exams are taken under the supervision of an approved person, most often an employee of AU or another university or college.

Students in each course have an assigned tutor who may be contacted by e-mail or telephone. E-mails may be sent at any time and are usually answered within two days. Students may telephone their tutor at assigned times (usually once a week) using a toll-free number. The telephone tutorial was an innovation in DE pioneered by AU (Byrne, 1989). The tutor answers questions on any aspect of the course. However, most of the undergraduate courses are developed for individual study and independent learning with limited or no requirement for contact with the tutor. As a result, the large majority of students have little contact with tutors and ask no more than a handful of questions during the entire course.

The annual registration in the nutrition courses in 2004 was 1050, an increase of about 210% in six years. As a result, AU has one of the highest number of course registrations in Canada for nutrition courses. This success has been achieved despite the fact that students have many choices for nutrition courses: in a web search conducted in September 2004 we found over 300 websites offering nutrition courses by DE through many universities and colleges across Canada. So, why do so many students choose AU to study nutrition? We undertook a survey of our students to find the answers to this question. The findings may have a wider relevance for planners of DE courses.

## NUTRITION COURSES AT AU

Nutrition has been taught at AU since 1986. The university now offers four 3-credit courses on the subject. The aim is not to train people to become nutritionists or dietitians, but rather to provide a more general education in nutrition or so that the credits obtained can then be applied to various degree programs across the country.

*Nutrition for Health*, Nutr 331, is one of AU's highest enrollment courses and accounts for three-quarters of the nutrition registrations. The course is taken mostly by students enrolled in non-science and nursing degree programs. The other three nutrition courses are typically taken by students enrolled in a science degree program, mainly human science.

Nutr 331 is based, to a large extent, on a textbook: *Nutrition Concepts and Controversies* by F. Sizer and E. Whitney. It utilizes approximately 260 pages of this text, as well as a 244-page Study Guide. The course has a minimum of biochemical content and is designed to be easily comprehensible to students with little science background. While the course covers general nutrition, about a quarter of it is given to the role of nutrition in the prevention and, where applicable, the treatment, of diseases of lifestyle, especially cardiovascular disease, cancer, obesity, and type 2 diabetes. This aspect of the course design – a health and disease focus, not a biochemical focus – is based on our belief that this more closely aligns with the needs and interests of the bulk of our potential students.

Nutr 331 includes a dietary self-evaluation. A two-day dietary record is kept and then analyzed using computer software that provides a detailed analysis of the nutrient content of the diet. Students are evaluated on this assignment (20%) and two exams. Course syllabi may be viewed at the AU website ([www.athabascau.ca/main/crs](http://www.athabascau.ca/main/crs)). As AU is an “open university”, pre-requisites are generally kept to a minimum, and none are required for Nutr 331.

## **METHODS**

We developed a questionnaire to investigate why students chose to take a nutrition course from AU, their level of satisfaction with the course itself, their opinions about greater use of computer-mediated learning, and their opinions of AU. The survey also gathered information on demographic background, as well as level of computer skill and computer access. The instrument contained 23 questions, of which 13 were answered on a Likert Scale from 1 to 5 (with 1 meaning “strongly agree” and 5 meaning “strongly disagree”); other questions were answered by ranking statements in terms of importance; and some questions were open-ended.

The respondents were students who had taken Nutr 331 between February 2002, and April 2003. Following approval by the AU Research Ethics Board, 379 students were selected from AU student records, using every eligible student in that time frame as our population group. We attempted to contact as many as possible by telephone so as to verify addresses and request agreement to participate. As a result, 60 were eliminated as being unreachable, and two were deemed ineligible. The questionnaire was piloted on nine of the students. This left 308 eligible students. This number was used to calculate the response rate. Questionnaires were then mailed

to the 205 students who agreed by phone to participate. Together with the questionnaire we included a tea bag as a “thank you.” Questionnaires were mailed back anonymously.

## **Survey Results**

The response rate to the questionnaire was 57.1% (176 were returned out of 308 eligible students). One questionnaire was discarded as it was completed incorrectly; these results are based on the remaining 175. Participants were mostly female (93.7%), and the majority (61.7%) were enrolled in a nursing degree program, with the remainder in a variety of other programs. The age distribution was as follows: 40.6% were under 25; 26.9% were 25-34; 22.3% were 35-44; and 10.3% were aged 45 and over. This age distribution is similar to that of the student body as a whole (Athabasca University, 2004).

We asked students why they took Nutr 331 rather than a similar course at another university. The leading reason was because of work commitment. The next four most common reasons, which were all cited and ranked similarly, were family commitment, a nutrition course was not available at their university, Nutr 331 was recommended, and a preference for studying by DE. Students were also asked whether they preferred to take the course in a classroom. A clear majority (58%) preferred to take the course by DE while 22% preferred a classroom setting.

Students were also asked their opinions on Nutr 331. The vast majority (93%) agreed that: “The course covered nutrition concepts of interest to me”, and 74% agreed that the exams were “a fair test of my understanding of the course material”. The large majority indicated that they were reasonably satisfied with the quantity of course material but with a trend that about one-fifth felt that there was too much. (Note: the length of the current version of the course, as described

earlier, is slightly shorter than the version taken by the students who completed this questionnaire.)

The large majority of students are proficient and regular users of computers and of the internet (data not shown). Students were questioned on their preference for various forms of computer-mediated learning. Detailed findings have been published in another paper (Temple et al., 2006). Students were asked whether they agreed with the following statement: “The course materials should be provided in a printed form only and not via a computer”. Fewer than half (44%) agreed while 33% disagreed. However, when the questions were more specific as to the study guide or textbook, then support for receiving material via a computer plunged: only 18% agreed that the study guide should be provided via a computer, while a mere 4% agreed with having the textbook provided by computer.

Students expressed very positive opinions of AU’s courses: 84% believed the quality is as good as those at other universities, while only 11% believed that AU courses are of lower academic credibility than similar courses taught at other Canadian universities.

## **DISCUSSION**

Completed questionnaires from the mailed survey were received from 176 students. We achieved a reasonably high response rate (57.1%). However, some of the findings must be viewed with caution. About 35% of students who take AU courses are also enrolled in degree programs at other universities. However, 62% of students who returned the questionnaire were enrolled in a nursing degree program and we deduce that the large majority of them are enrolled in the AU



post-RN nursing degree program, which includes nutrition as a course option. This could create a biased view about AU. Our study sample also differed from the general profile of AU undergraduate students in that a higher proportion of our subjects are female (94% vs. 66%).

While our study has limitations, it does provide useful information about course design.

Although the majority of students who responded are nurses and are multiple-role women, they are probably similar to other students engaged in DE with respect to their opinions on the topics investigated here.

DE offers much flexibility and allows students to study virtually anywhere, to start at any time, and to study at their own speed. This no doubt explains our findings that large numbers of our students choose to take Nutr 331 by DE because it allows them to overcome obstacles created by work and family commitments. In this regard it is highly relevant that students who completed the questionnaire are not typical of Canadian undergraduate students: almost 60% of them were aged over 25. The importance of work commitment as a reason for studying by DE is supported by a study of DE students at the Open College of Ryerson Polytechnical Institute, Canada (Thompson, 1998). Among this group 84% were employed outside the home (62% fulltime). Similarly, in a study of 573 professional women, many of whom were nurses, studying by DE in various programs across Canada, 90% worked full time outside of the home and 95% had five or more roles in addition to being a student (Cragg et al., 2005).

Many students also expressed a preference for studying by DE over being in the classroom, and, indeed, chose AU rather than another university for that reason. A finding from a previous study

of undergraduate and postgraduate students at AU was that the great majority (70%-90%) considered that being able to study at their own pace and being able to study at any place were both important to their success in learning (K. Rosa, personal communication). Yet, a significant minority (22%) in our study would have preferred a classroom setting. Reasons for that preference may include interaction with other students, enhanced learning when listening to an instructor, and improved self-discipline when having to follow a fixed timetable. In an American study, a comparison was made between a DE format and a classroom one for teaching continuing education workshops in sport nutrition. The findings indicate only slightly higher average scores for the classroom setting than for the DE format (Ricketts et al., 2001). However, a focus on averages may mask differences between different sub-groups of students.

Nutr 331 is intended for students with minimal science background. Accordingly, there is very little biochemical content. The relationship between diet and diseases of lifestyle – notably cardiovascular disease, cancer, obesity, and type-2 diabetes – is emphasized. This emphasis on health aspects of nutrition is considered especially important as a large proportion of the students taking the course are nurses. These aspects of the course design probably explain why students expressed very positive opinions concerning the course content: 93% agreed that the course “covered nutrition concepts of interest to me”.

Although AU and many other universities have put considerable resources into the development of online courses, our findings suggest that this may be unpopular with large numbers of students. A large majority prefer printed material for the major part of the learning material, especially the textbook. In a previous study of undergraduate and postgraduate students at AU, a

lower proportion (51%) indicated a preference for studying from printed materials rather than using a computer (K. Rosa, personal communication). Differences in the results between the surveys may reflect such factors as the type of students being surveyed and how the questions are perceived. The opposition of large numbers of students to using a computer for studying is not surprising. Providing the major part of course materials via a computer, whether online or on a CD, has several disadvantages: compared to printed textbooks computers cause more eyestrain, necessitate sitting in a fixed position, restrict locations where studying can be done, and make it difficult to refer quickly to different parts of the course materials.

The advent of the internet and the development of online courses have induced a profound change of attitude toward DE in general and toward AU in particular. This probably helps explain the rapid growth in AU in recent years: course registrations increased by 134% during the seven years to 2003. The overwhelming majority of students in our study rated AU courses as being as good as those at other universities, while only 11% felt that AU courses are of lower academic credibility than similar courses taught at other Canadian universities.

Our findings provide lessons for those who are developing courses and programs in DE. The rapid growth in student numbers at AU, in general, and for Nutr 331, in particular, clearly owes much to the advantages that many students gain from the DE mode of learning. But that does not explain why students have come to AU and taken Nutr 331 rather than going to other institutions and taking other nutrition courses by DE. We believe that the following factors are of particular importance:

1. Nutr 331 has a health and disease focus, not a biochemical focus. It is important to tailor courses to the real needs of the intended students rather than using formats that can be seen as owing more to tradition than to the actual learning needs of the students.
2. We used a course team approach in developing the original version of the course and during each successive revision. We have endeavored to keep the course current and based on the latest edition of the textbook, and to ensure pedagogical quality in the format and writing of the course.
3. We have created a student-friendly balance between computer technology and older technology. The course materials are provided to students in a printed format rather than via a computer. As a result students are not required to spend endless hours on the computer or large amounts of time and money printing the textbook and study guide. At the same time students can easily access their tutors via e-mail and phone.
4. AU has developed a very positive image over the years amongst students from across Canada.

Courses and universities are like mousetraps: build a better one and the students will come.

### **Acknowledgments**

We thank Lindsay Guyn, BSc, for assistance with the statistical analysis. We also thank Athabasca University for financial support.

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